A. NAGEL & R. KAEMP.
Roller-Mill Adjustments.

No. 221,600. Patented Nov. 11, 1879.

Fig. 2.

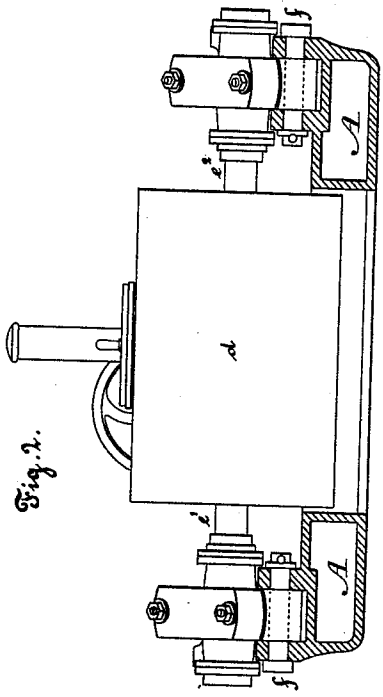


Fig. 3.

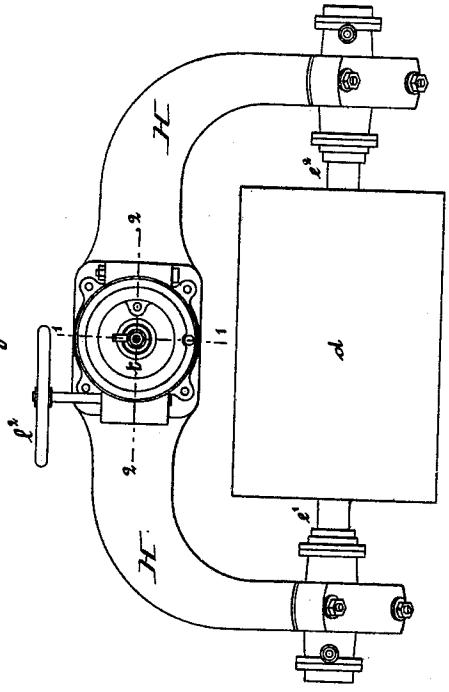


Fig. 1.

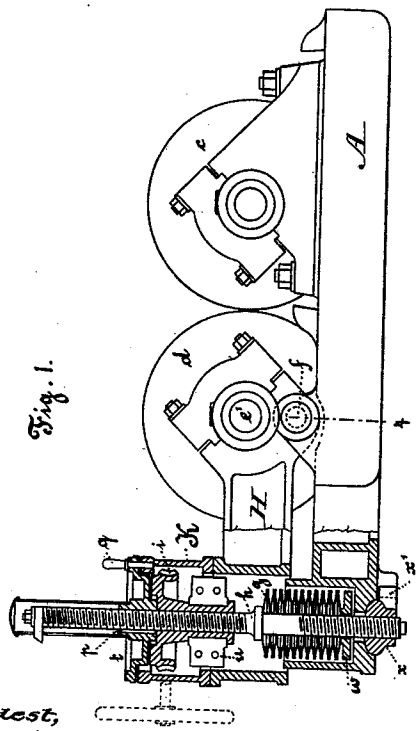


Fig. 5.

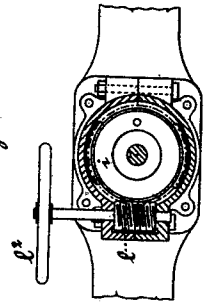


Fig. 6.

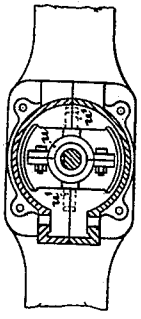
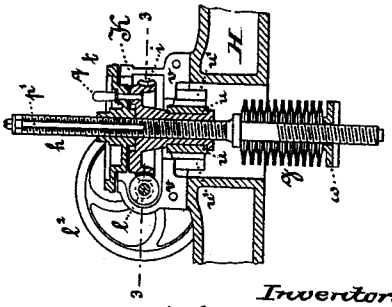


Fig. 4.



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UNITED STATES PATENT OFFICE.

AUGUST NAGEL AND REINHOLD KAEMP, OF HAMBURG, GERMANY.

IMPROVEMENT IN ROLLER-MILL ADJUSTMENTS.

Specification forming part of Letters Patent No. **221,600**, dated November 11, 1879; application filed September 20, 1878; patented in Belgium, October 20, 1877, in France, October 23, 1877, in England, November 5, 1877, and in Italy, December 31, 1877.

To all whom it may concern:

Be it known that we, AUGUST NAGEL and REINHOLD KAEMP, both of Hamburg, in the German Empire, have invented certain Improvements in Roller-Mills, of which the following is a specification.

This invention relates to an improved regulating mechanism of the adjustable roller of a roller-mill as used for the manufacture of flour; and the object of the same is to provide means for regulating on the one hand the distance between the two rollers, and on the other hand the pressure with which the rollers act on the grain to be comminuted.

The invention is represented on the annexed sheet of drawings.

Figure 1 represents a side view of the main parts of the mill with the regulating-gear in section on line 1 1 of Fig. 3. Fig. 2 is a front elevation of the adjustable roller *d*, the bed-plate being shown in section on line 4 of Fig. 1. Fig. 3 is a plan of the adjustable roller and bell-crank lever H. Fig. 4 represents a section of the adjusting-gear on line 2 2 of Fig. 3. Figs. 5 and 6 are both sections on line 3 3 of Fig. 4; but while in Fig. 5 the worm-wheel and worm are shown, these parts are supposed to have been removed in Fig. 6.

The adjustable roller revolves with its journals e' and e^2 in bearings forming part of a strong double-branched bell-crank lever, H, which is pivoted to the bed-plate A by the pins *f f*, Figs. 1 and 2. These pins are vertically below the journals e' and e^2, and the distance from the center of either of the pins *f* to the center of the journal e' or e^2 constitutes the length of the short vertical arms of the said bell-crank lever H, whereas the distance from the center line of *f f* to the center of the adjusting-gear is virtually the long horizontal arm of the lever H.

It is evident that when, with this arrangement, the end of the horizontal arm is moved up or down, the roll *d* will be caused to rock to and fro, so as to be brought closer to the roll *c*, revolving in fixed bearings, or to be drawn away from it.

The adjusting-gear is placed in the center of the bow of the bell-crank lever H. It consists of a screw, *h*, which works at its lower end in a nut, *x*, and at the top in the boss of the worm-wheel *i*. The said nut *x* is prevented from turning by a projection, *x'*, fitting between two projections on the under side of the bed-plate.

g is a spring or series of springs acting on a collar on screw *h*, and abutting against a plate, *w*, which bears on a part of the bed-plate A. The object of this spring is to press the lever H upward, and consequently to cause the roller *d* to be forced with a certain tension toward the roller *c*.

The boss of the worm-wheel *i* rotates in a bearing, *u*, consisting of two parts screwed together, and having two pivots or projections, *w'*, with which it bears on the under side of suitable projections *v*, forming part of the casing K, attached to the lever H. (See Figs. 1, 4, and 6.) The parts of the bearing *u* may, however, be cast together with the said casing K, which also consists of two parts.

t is a disk having a boss with smooth bore, through which the screw *h* passes freely; but it is provided with a feather, *p*, which fits into a groove, *p'*, Fig. 4, of the said screw, so that the latter and the disk must always rotate together.

q is a pin with which the disk *p* can be locked either to the casing K, as shown in Fig. 1, or to the worm-wheel *i*, as represented in Fig. 4.

The operation of this device is as follows: When the pin *q* is applied, as shown in Fig. 4, the disk *t* is locked to the worm-wheel *i*. Consequently, if under these circumstances the hand-wheel l^2 is turned, the worm *l* will cause the worm-wheel and the disk to revolve together, and the latter by its feather *p* drives the screw *h*, which is thereby screwed up or down in the nut *x*, so as to cause the spring *g* to expand or to be compressed, respectively. When the pin *q*, on the other hand, is used for locking the disk *t* to the casing K, the screw will be prevented from revolving by the feather *p*. If, then, the worm-wheel is rotated by hand-wheel l^2 and worm *l*, the former will be screwed up or down on the stationary screw *h*, and the outer end of the lever H will be raised or lowered accordingly, but without affecting the tension of the spring.

This combined arrangement, therefore, al-

lows the distance between the rollers, as well as the pressure with which the rollers act on the grain, &c., to be regulated, and whatever may be the said distance the rollers will always act with a certain definite amount of pressure on the grain to be crushed, which is proportionate to the tension to which spring *g* has been regulated.

We claim as our invention—

The combination, with the crushing-roll *c*, mounted in fixed bearings, and the crushing-roll *d*, mounted in bearings provided in a bell-crank lever, of the adjusting-screw *h*, actuating-wheel *i*, coupling-disk *t*, and spring *g*, said mechanisms being constructed and arranged so that by coupling the disk to the lever the lever will be moved to adjust the distance between the rolls, and by coupling the disk to the wheel said screw will be rotated to regulate the tension of the spring, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

AUGUST NAGEL.
REINHOLD KAEMP.

Witnesses:
LOUIS FANTREN,
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